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(56) Documents Cited

GB 2266396 A GB 2199436 A GB 2186722 A

GB 2184749 A GB 1489971 A

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(54) Apparatus for controlling flooding from a water using appliance

(57) The apparatus comprises means eg a tray 12 for collecting water leaking from the appliance and means 14 for detecting water collected, which means can generate a signal which can be used to switch off the appliance to prevent further water demand. The detecting means may be a float-actuated microswitch or a moisture sensor. The signal can also be used to activate a pump to discharge water from the appliance.

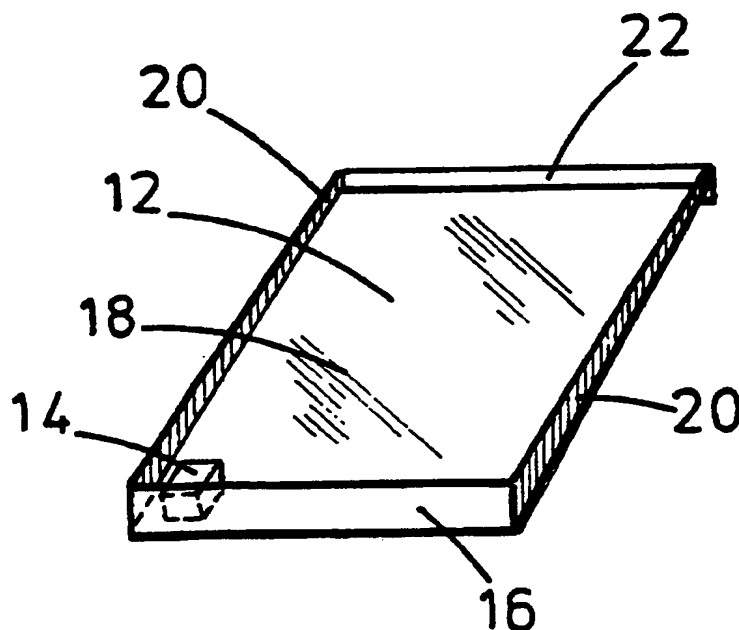


FIG. 2

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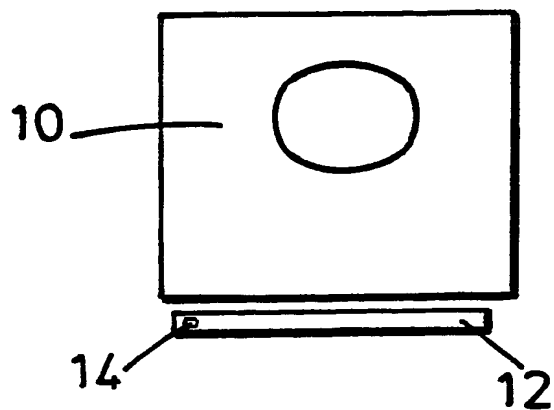


FIG. 1

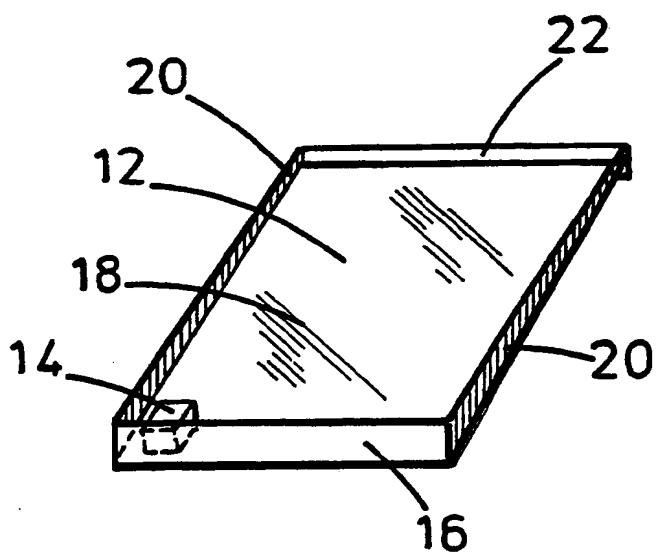


FIG. 2

Title: Means for detecting water leakages from
appliances

DESCRIPTION

This invention concerns appliances that have a
5 water cycle and, in particular, means for detecting
water leakages therefrom.

Domestic appliances that use water, such as
washing machines and dishwashers, may from time to time
malfunction and cause flooding. Such malfunctions can
10 be as a result of a blockage in a water pipe or a
rupture of a water pipe or seal in the appliance. Often
domestic appliances of this type are left running with
no-one in attendance, so that flooding can go unchecked
and result in considerable damage.

15 The same may also be true of commercial
appliances involving a water cycle.

An object of this invention is to provide means
for preventing or limiting flooding from an appliance
that has a water cycle.

20 According to the present invention, it is
proposed that water leaking from an appliance be
collected and that means for detecting water collected
be provided, which means can generate a signal which can
be used to switch off the appliance to prevent further

water demand.

Preferably a tray is provided beneath the appliance in which water leaking from the appliance can collect. The preferred tray has a sloping base, especially a base that slopes in two directions. The means for detecting water in the tray is preferably positioned at a deepest part of the tray, especially in a corner towards which the base slopes.

The tray is preferably sized so as to be capable of holding the maximum amount of water in the appliance at any one time of its cycle operation. The tray may also have a drainage point so that collected water may be easily disposed of.

The means for detecting water collected in the tray may be any suitable means that will react to water in the tray such that a signal may be generated to effect switching off of the appliance. In one preferred embodiment the detecting means is a float in a chamber open at or near its base so that water in the tray will cause the float to rise to actuate, for example, a microswitch forming part of a signal generating circuit. In an alternative preferred embodiment, the detecting means is a moisture sensor, which can generate said signal.

The signal may be also be used to generate an alarm signal which is visual, audible or both as a

further safeguard.

It is further preferred that the signal generated on detection of water be used to activate pump means when present in the appliance in order to evacuate
5 water that is in the appliance. Thereby it may be possible to reduce further the risk of damage due to flooding. It may be possible with this feature to reduce the depth of the tray or the like used to collect leaked water.

10 The invention is applicable not only to domestic appliances but also commercial appliances, which have a water intake cycle.

The invention will now be further described, by way of example only, with reference to the accompanying
15 drawings, in which:-

Figure 1 shows a domestic appliance with a flood protection device, and

Figure 2 shows the flood protection device.

Referring to the accompanying drawings, a
20 domestic appliance 10, such as a washing machine, has underneath it a tray 12. The tray 12 contains a float chamber 14 which is open at the bottom so that water in the tray can act on a float in the chamber. The float is arranged to actuate a microswitch which is connected
25 to the electrical operating circuitry of the appliance. When the float actuates the microswitch, a signal is

generated so that the appliance is switched off and water is no longer drawn into the appliance.

The tray 12 has a sloping base 18 surrounded by a front wall 16, side walls 20 and a rear wall 22. The
5 base 18 meets the rear wall 22 above floor level in order to provide the slope. The float chamber is positioned near the front wall 16. Then if water does escape from the appliance it will collect at the front wall of the tray so that the float chamber will be
10 quickly affected and the demand for water stopped quickly.

Furthermore, the signal generated as a result of movement of the float may be used to activate pump means within the appliance to pump out water that is actually
15 in the appliance at the time the signal is generated.

In that way, not only will initial flood water be collected in the tray to prevent damage to the area surrounding the appliance but once sufficient water has collected in tray, the float will rise to actuate the
20 microswitch which will switch off the appliance and hence the further supply of water to the appliance.

The tray is preferably of a sufficient size to collect the maximum amount of water that will be present in the appliance at any time of its cycle.

25 As an alternative to a float, a moisture sensor may be used to detect collection of water in the tray

positioned in the same place on the float chamber.

The tray has been shown with its base sloping in one direction. However, it may be advantageous to have the tray base sloping in two directions, ie. towards one corner only, with the float chamber a moisture sensor in the corner, so that a faster response to a flood situation may be achieved.

CLAIMS

1. Apparatus for controlling flooding from a water using appliance comprising means for collecting water leaking from the appliance and means for deterring water collected, which means can generate a signal which can be used to switch off the appliance to prevent further water demand.
2. Apparatus as claimed in claim 1, comprising a tray for collecting water leakage from the appliance.
3. Apparatus as claimed in claim 2, wherein the tray has a sloping base.
4. Apparatus as claimed in claim 3, wherein the base slopes in two directions.
5. Apparatus as claimed in any one of claims 1 to 4, wherein the means for detecting water in the tray is positioned at the deepest part of the tray.
6. Apparatus as claimed in claim 5, wherein the means for detecting water is in a corner of the tray towards which the base of the tray slopes.
7. Apparatus as claimed in any one of claims 2 to 6, wherein the tray has a drainage point.
8. Apparatus as claimed in any one of claims 1 to 7, wherein the means for detecting collected water is a float in a chamber open at or near its base, whereby water in the tray causes the float to rise.

9. Apparatus as claimed in claim 8, wherein the rising of the float actuates a microswitch forming part of a signal generating circuit.

10. Apparatus as claimed in any one of claims 1 to 7,
5 wherein the means for detecting collected water is a moisture sensor.

11. Apparatus as claimed in any one of claims 1 to 10, wherein the signal is used to generate an alarm signal.

10 12. Apparatus as claimed in claim 11, wherein said alarm signal is visual and/or audible.

13. Apparatus as claimed in any one of claims 1 to 12, wherein the signal is used to activate pump means in the appliance to evacuate water therefrom.

15 14. Apparatus for controlling flooding from a water using appliance substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

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Relevant Technical Fields

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(ii) Int Cl (Ed.5) G01M 3/00, 3/16, 3/18

Search Examiner
D L SUMMERHAYES

Date of completion of Search
7 JANUARY 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-
1-14

(ii)

Categories of documents

- X:** Document indicating lack of novelty or of inventive step. **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category. **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art. **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2266396 A	(SHACKELL)	1-4, 10-12
X	GB 2199436 A	(B & R)	1-5, 7, 10
X	GB 2186722 A	(WEBB)	1, 10-12
X	GB 2184749 A	(GILL)	1, 2, 7, 10-12
X	GB 1489971	(HUSQVARNA)	1, 10

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